REMARKS

Claims 1, 7, 8, 14 and 15 have been amended. No new matter has been added by way of these amendments.

Claims 1, 8 and 15 have been amended in a similar way. More precisely, the distinguishing feature "*wherein said correlation displaying comprises displaying a matrix comprising a header row defining possible causes in order to determine whether there has been a significant change in the parameter, and a header column defining the major formation parameter made by the logging sensors, a cell existing for every possible correlation identified between the observed effect and the probable causal event*" is based on the specification paragraph [0038] first nine lines and FIG. 6, and the distinguishing feature "*analyzing the causal event and changes for the wellbore interval based on the displayed matrix*" is based on the specification paragraph [0039] first three lines. Applicant has amended independent claims 1, 8 and 15 to differentiate more clearly the claimed invention over the cited reference Bargach et al.

Claims Rejections - 35 USC § 102:

The Examiner rejected claims 1, 3-8, and 10-15 under 35 USC 102(b) as being anticipated by "Real-Time LWD: Logging for Drilling", Bargach et al.

Applicants respectfully disagree with the interpretation of the teachings of Bargach et al made by the Examiner. It is respectfully submitted that amended claim 1 would not have been anticipated by Bargach et al or rendered obvious to a person of ordinary skill in the art over Bargach et al. Indeed, the cited reference does not disclose, suggest, teach or motivate the skilled person to derive the hereinbefore mentioned distinguishing features of amended independent claim 1.

More precisely, with respect to the hereinbefore mentioned distinguishing features of claim 1, as indicated in the specification paragraph [0039] last three lines, while the matrix still requires understanding of the physics of each measurement to be able to make an interpretation of the results, such an interpretation is facilitated by the matrix. Indeed, a variety of explanations exist for the observed changes in the parameters. The log analyst is always interested in "tools" helping him to get the true explanation when looking at raw

data obtained from the logs. The invention facilitates the interpretation of said data obtained from the logs. Bargach et al fails to disclose or to give any indication about analyzing the causal event and changes for the wellbore interval based on a matrix comprising a header row defining possible causes and the means to determine whether there has been a significant change in the parameter, and a header column defining the major formation parameter made by the logging sensors (LWD tools), a cell existing for every possible correlation identified between the observed effect and the probable causal event. As a consequence, Bargach et al does not teach or suggest the distinguishing features of independent claim 1.

The hereinbefore remarks made with regards to independent claim 1 also apply with respect to amended independent claims 7 and 15. The distinguishing features of these claims are not disclosed or suggested by Bargach et al.

Applicant maintains that the Examiner has adopted an incorrect interpretation with regard to the teachings of Bargach et al. More precisely, with respect to claim 1, the Examiner is incorrect in stating that the disclosure "*Track 1 shows elapsed time between bit penetration and resistivity measurement*" (top Figure on page 62) of Bargach et al would anticipate the claimed feature "*obtaining second log data at a time later than the first log data, said second log data being acquired by the logging sensor during a second pass over the wellbore interval*". In effect, Bargach et al discloses that "measurement are obtained during the same pass because the 'resistivity images are generated from data obtained by near-bit sensors, while density images are generated from data obtained by sensors 60 to 130 ft [18 to 40m] behind the bit'" (see last paragraph of 3rd column on page 62). Indeed, LWD tools are typically long tools comprising a plurality of spaced apart sensors (near-bit sensors and other sensors at distance from the bit) performing different measurements but at the same time, thus during a single pass.

Furthermore, Applicant contends the Examiner is incorrect in stating that the disclosure in Bargach et al "*Track 4 presents VISION resistivities (attenuation and phase shift)*" (top Figure on page 62) would anticipate the claimed feature of "*calculating a plurality of delta values between the first log data and the second log data, each delta value being calculated by taking a difference between a parameter of said first and second log data*". In effect, Bargach et al discloses a way of representing the parameter

"resistivity", which is a mathematical complex value that may be represented according to its attenuation and its phase shift. In contradistinction to the Examiner' statement, Bargach et al is not strictly talking about attenuation resistivity or phase shift resistivity. As it is known in the art of logging, attenuation is the reduction in amplitude of an electromagnetic wave passing through the formation, usually measured in decibels/meter, dB/m. Further, phase-shift is the change in position of the peaks of a sinusoidal electromagnetic wave as it passes through the formation. If the sinusoidal wave picked-up by two receivers a certain distance apart in a formation are compared, it is found that the wave has been attenuated and shifted in time. These terms are used in particular with reference to the propagation resistivity log and the electromagnetic propagation log as shown in Bargach et al. Thus, it is clear that the attenuation and phase-shift discussed in Bargach et al are obtained in a single pass and not by calculating any difference in the sense of the present invention. As a conclusion, this Figure of Bargach et al does not disclose calculating a plurality of delta values between the first log data and the second log data, each delta value being calculated by taking a difference between a parameter of said first and second log data.

The hereinbefore comments are also applicable to the Examiner's response to Applicant's arguments filed 5/7/08 (first item of Response to Arguments). The Examiner's statement related to this specific issue is incorrect for the same reasons. Furthermore, the Examiner is also incorrect in stating that the disclosure in Bargach et al of delta Rho (page 78, first column, first paragraph) would anticipate the claimed feature of "*calculating a plurality of delta values between the first log data and the second log data, each delta value being calculated by taking a difference between a parameter of said first and second log data*". In effect, Bargach et al teaches that the bottom density measurement may not have the lowest delta Rho and a different quadrant density is most representative. As it is known in the art of logging, delta Rho is a log that shows the magnitude of the correction applied to the long-spacing detector of a density measurement. When delta Rho is above a certain value, typically +/- 0.15 g/cm3, the correction may no longer be accurate, and needs to be examined in more detail. Further, this paragraph in the section related to "*Recognizing and Preventing Problem*" has nothing to do with time-lapse analysis but with classical single pass logging. In conclusion, this paragraph of Bargach et al does not disclose calculating a plurality of delta values between the first log data and the second log

data, each delta value being calculated by taking a difference between a parameter of said first and second log data.

Conclusion:

Applicant is of the opinion that this reply is fully responsive to all outstanding issues. Accordingly, the application is now deemed to be in condition for allowance, and favorable reconsideration on the basis of these remarks is solicited.

This paper is submitted in response to the Office Action mailed 14 August 2008 for which the three-month date for response is 14 November 2008. Please apply any charges not covered, or any credits, to Deposit Account 50-2183 (Reference Number 21.1068).

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